dwellings from which mosquitoes could be barred out, in order that the German colonies of Eastern Africa might be freed from malaria, ought surely to be acted upon in countries where it is not only malaria that has to be contended with, but also the dreadful yellow fever, aptly called the "plague" in the early Spanish chronicles of America, from its analogies with the Oriental disease of that name. Why should not the houses, in yellow-fever countries, be provided with mosquito blinds, such as are used in the United States as a mere matter of comfort, whereas here it might be a question of life or death? The mosquito larvae might be destroyed in swamps, pools, privies, sinks, street-sewers, and other stagnant waters, where they are bred, by a methodical use of permanganate of potassium or other such substances, in order to lessen the abundance of mosquitoes; but the most essential point must be to prevent those insects from reaching yellow-fever patients, and to secure a proper disinfection of all suspicious discharges, in order to forestall the contamination of those insects. Well ventilated hospitals should be built on high grounds, with no stagnant waters or marshes in their vicinity, the doors and windows protected by mosquito blinds, a good system of drainage and sewerage, with facilities for disinfecting all suspicious discharges, and for destroying such mosquitoes and larvae as might be found within the building. Only the upper stories should be occupied by the sick, and none but yellow-fever patients, and such malaria patients as are immune against yellow-fever, should be admitted. The examination for admission might be carried out in a separate building, and a separate department devoted to suspicious cases under observation.

With such hospitals at hand, and an efficient board of health that would see to the proper arrangements for patients who could be left in their homes, and general sanitary improvements in and around the principal cities, there can be little doubt that yellow fever might be stamped out of Cuba and Porto Rico, and malaria reduced to a minimum. It would then be the business of the port and quarantine officers to prevent the introduction of fresh germs.

THE COMMOTION IN KANSAS AND MISSOURI UPON THE APPEARANCE OF DISSOSTEIRA IN COLORADO.

BY S. J. HUNTER, LAWRENCE, KANSAS.

In looking over the literature upon *Dissosteira longipennis* Thos., I was surprised to find that no detailed record had been made, in literature readily accessible to entomologists, of the grave fears in Kansas and Missouri caused by

this locust's invasion of Colorado in 1891. It is not overstating the matter to say that it was rumored and credence given the report that the migratory locust was approaching from the west, and that the effect of such a rumor was little short of a panic. The large full-faced headlines of some of the leading dailies of Kansas and Missouri published at that time illustrate the feeling. A few are here shown: —

"Not Red Legs. No Grasshopper Plague. Professor Snow Says The Insects On The Colorado Border Are There All The Time. He Says They Are Of The Long Winged Variety. There Is No Danger Whatever From The Pest Either This Year Or Next." (Headlines from Kansas City Journal of July 14, 1891.) —— No Need For Fear. Colorado's Visitors Harmless. Chancellor Snow Reassures The Farmers Of Kansas. The Present Grasshoppers Not The Terrors Of The Past. No Attacks Being Made By The Insects Upon The Corn."

Under this latter heading appeared the following telegram from Professor Snow: —

"Arriba, Col. (seventy miles from the Kansas line), July 16 — My observations have confirmed my previous opinion that the grasshoppers now infesting portions of eastern Colorado will not invade Kansas.

It is not the destructive Rocky Mountain locust which devoured Kansas in 1874 and 1875, but a native species of the plains — the long winged locust.

This species is now devouring the forage grasses of this vicinity, but leaves entirely unharmed the numerous corn fields in the infested area. One or two good rains will repair the damage done to the range." (From the Kansas City Times of July 16, 1891.)

"Safe! Report Of The 'Capital's' Special Commission Investigating The Locust Pest. Careful Observations Develop The Fact That The Kansas Farmer Is Safe From The Robbing Horde. An Undesirable Journey. Seventy-five Miles Of Wagoning And Fighting With The Advance Guard. Scientific Conclusions, Deduced From Actual Observation Of The Habits And Movements Of The Scourge A Southward Movement Indicated By The Latest Tactics Of The Invaders. The Investigation Completed." (Headlines from Topeka Capital of July 17, 1891.)

Chancellor F. H. Snow and Professor E. A. Popenoe were commissioned by the "Topeka Capital" to investigate the actual conditions. They accordingly went to the infested region, and gave the subject careful consideration. Their report, made after traveling by wagon over the territory attacked, contains many interesting features. The infested district covered an irregular tract of about 300 square miles in the northern part of Lincoln County, Colorado. The approximate boundaries were from Limon, sixteen miles east, nine miles south, seven miles west diagonally southeast fifteen miles to Hugo. And it is interesting to quote the language of the report.

"Within this area the two favorite grasses of the range, buffalo and grama grass, have been eaten to the ground. Even here, however, other vegetation is untouched, not excepting the fields of young corn in luxuriant growth."

"The only injury to any field crop which has come to our knowledge, is the destruction of a twelve acre field of fodder sugar cane or sorghum, only four inches in height. We have repeatedly seen the locusts passing

through the cornfields in swarms without inflicting the slightest injury."

"When the devouring multitudes are at work upon the grass the noise of the grinding of their jaws is distinctly audible to the listener as a well defined crackling sound.

"Over the face of the country traversed by the hosts, their almost complete destruction of the grasses leaves the ground looking bare and brown, while ahead of them the hills are fresh and green. The coarser grasses in the "draws" are generally left untouched, as are also the numerous asters, sunflowers, goldenrods, and many other plants."

"As we left Hugo this afternoon on our way northeast to Arriba, thousands of these heavy flyers came dashing into our faces. Our horses were greatly annoyed, and it became necessary to protect our eyes from the force of the blows inflicted by the numerous collisions.

The average rate of travel for the individual was about a mile in six hours; this rate was not maintained through the day. They were most active during the middle of the day and advanced north at the rate of nine miles in two weeks and south at about the same rate. The eggs from which these hordes came were deposited the previous August and September by locusts which flew into this area. No internal parasites were observed. A species of Asilidae was noted capturing and killing several individuals.

These notes are of interest in throwing light upon the habits and destructive possibilities of a species of locust up to this time comparatively rare, and therefore considered of little economic importance. The causes which give rise to the sudden appearance in great numbers of a species, classed as rare, are not readily found. They are, nevertheless, an interesting study.

LIFE HISTORIES OF NORTH AMERICAN GEOMETRIDAE. — II.

BY HARRISON G. DYAR, WASHINGTON, D. C.

Nemoria subcroceata Walk. The specimens from which eggs were obtained were in poor condition, but Dr. Hulst remarks, "I took this to be a faded specimen of *Nemoria subcroceata*" and I believe that this determination is correct. I find no previous description of the larva.

Egg. Elliptical, flattened above and below, pale green, slightly shining; surface smooth, finely shagreened; size .6 × .5 × .3 mm. Later the color is greenish yellow.

Stage I. Short, with normal feet, the thorax contracted. Head round, pale brown, width .25 mm. Body pale brown, a broad dorsal and fainter narrow subdorsal light red lines; cervical shield and anal plate not differentiated. Feet a little paler than the body, moderate except the anal pair which are large and widely spread laterally. Setae i to v small, black, with large clubbed tips, the tubercles minute; head setae also clubbed; cervical shield area roughened, the tubercles there slightly produced. Later pale ocherous greenish with faint whitish subdorsal and lateral lines. Skin finely reticular shagreened. Still later rusty brown